

WHAT IS CLAIMED IS:

1. A light-signal delaying device comprising:

a linear guide rail;

a pair of stages engaged with the linear guide rail;

a V-groove holder mounted on one of the stages;

a pair of optical fiber collimators secured to the V-groove holder;

a pair of reflecting mirrors mounted on the other stage in such a manner that reflecting surfaces thereof intersect at 90°; and

an actuator for moving the stage on which the reflecting mirrors are mounted along the linear guide rail.

2. A light-signal delaying device according to Claim 1, wherein:

one of the pair of stages to which the pair of optical fiber collimators is fixed is a fixed stage that is fixed at a predetermined position on the linear guide rail;

the stage to which the pair of reflecting mirrors is fixed is a movable stage capable of moving along the linear guide rail; and

each stage has a pressing mechanism for applying pressure in a direction perpendicular to the direction of movement of the linear guide rail to prevent a gap between the stages and the linear guide rail.

3. A light-signal delaying device according to Claim 1, wherein:

each of the pair of optical fiber collimators is a GRIN lens having a pitch of 0.25, which is connected to an optical fiber;

connecting end faces of the GRIN lens and the optical fiber are obliquely

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polished at 6° or more and connected to each other; and

an anti-reflection film is formed on each light-beam incidence/exit end face.

4. A light-signal delaying device according to Claim 1, wherein:

the pair of reflecting mirrors is a first reflecting mirror and a second reflecting mirror, which are arranged in such a manner that the reflecting surfaces meet each other at 90° and have an incidence angle and an exit angle of 45° with respect to incident light and exit light, respectively;

the first reflecting mirror deflects the light beam incident from the first optical fiber collimator by 90° with respect to the optical axis, and reflects it toward the second reflecting mirror; and

the second reflecting mirror deflects the incident light beam by 90° with respect to the optical axis, and reflects it along the optical axis of the second optical fiber collimator.

5. A light-signal delaying device according to Claim 1, wherein:

the V-groove holder has two V-grooves formed in parallel;

the pair of optical fiber collimators is arranged in the V-groove holder such that the optical axes are in parallel with each other;

the pair of reflecting mirrors is secured to the movable stage such that each of them faces the corresponding one of the pair of optical fiber collimators; and

the light beam propagating between the optical fiber collimators can be sent to and received from the reflecting mirrors with a low transmission loss.

6. A light-signal delaying device according to Claim 1,

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wherein, the actuator for moving the movable stage is based on any one of a motor-driven ball screw mechanism, an air-driven cylinder mechanism, and a manual ball screw mechanism.

7. A light-signal delaying device according to Claim 1,
wherein, each of the pair of reflecting mirrors has a metal film or a multilayer dielectric film formed on the reflecting surface thereof.

8. A light-signal delaying device according to Claim 1,
wherein, each optical fiber used in the optical fiber collimators is any of a single mode fiber, a mode-dispersion shift fiber, and a polarization preserving fiber.

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